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PROPAGATION OF SEEDLINGS

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(57) Claim

1. A propagation tray moulded in foamed polystyrene comprising an open enclosure with side walls, end walls and a base, drainage apertures being provided in the base, characterized in that a plurality of equally spaced serrations are provided on the interior of the side walls.

12. A method of propagating seedlings comprising:

(a) stretching an array of concertina paper pots onto a comb to form a rectangular array of hexagonal pots,

(b) positioning the comb and array of paper pots in a propagation tray according to any one of Claims 1 to 11 with the comb in abutment against the end walls of the tray so that the peripheral side walls of the hexagonal pots are in abutment with the serrations formed on the side walls of the tray,

(c) filling the hexagonal pots with potting mix,

(d) removing the comb,

(e) positioning the tray at a predetermined position beneath a seeding machine, and

(f) planting one or more seeds at a predetermined position within each hexagonal pot.

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COMPLETE SPECIFICATION

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Australia.Complete Specification for the invention entitled:
PROPAGATION OF SEEDLINGSThe following statement is a full description of this invention
including the best method of performing it known to me:-

- 2 -

PROPAGATION OF SEEDLINGS

5 This invention relates to the propagation of seedlings and in particular relates to a tray for use in the propagation of seedlings. The invention also embraces a method of using a propagation tray.

10 The propagation of seedlings in nurseries is a very labour intensive and time consuming business. The seeds have to be planted in discrete small pots filled with a suitable potting mix. Whilst there are available seeding machines that ensure even distribution of the seeds into particular pots it is a very time consuming exercise to fill each pot with
15 potting mix and to position the pots so that the machine accurately locates the seed. There is currently on the market

- 3 -

a product sold under the trade name PAPERPOT that comprises a plurality of interconnected strips of paper arranged to concertina so that when stretched outwardly the assembly forms a rectangle that is filled with a plurality of interconnected open-ended hexagonal paper pots. By stretching the array of paper pots out into a suitable tray and pinning or otherwise securing the array to the tray in the stretched configuration the hexagonal paper pots can be filled with a suitable potting mix thereby allowing the seeds to be planted in each hexagonal pot. The bio-degradable paper pots last long enough for the seeds to propagate and can be simply cut or removed from the tray for subsequent planting.

However, there are a number of problems in using the product PAPERPOT. One such problem is the time and effort that is required to pin the product in its expanded form into a suitable tray. The product tends to assume its folded state and thus has to be held by some means in its expanded form prior to placing the potting mix into the individual hexagonal pots. When a seeding machine is used to deposit a seed into each pot it is very important that the exact configuration of each pot is accurately determined otherwise the machine may not deposit a seed centrally of each pot. The stretching and pinning operation renders it extremely difficult to ensure that each pot is in a predetermined position and thus it has proved very difficult to use this product with automatic seeding machines.

It is the above problems that have brought about the present invention.

According to one aspect of the present invention there is provided a propagation tray moulded in foamed polystyrene to define an open enclosure comprising side walls, end walls and a base, drainage apertures being provided in the base, characterized in that a plurality of serrations are provided on the interior of the side walls.

In a preferred embodiment, each serration has an included angle of 120° .

- 4 -

In one embodiment the end walls are also provided with suitably profiled equally spaced apart projections.

When the concertina paper pots are stretched to fill the enclosure the inclined surfaces of adjacent serrations provide complimentary abutments to two adjacent sides of a hexagonal pot.

According to a further aspect of the present invention there is provided a method of propagating seedlings comprising:

- 10 (a) stretching an array of concertina paper pots onto a comb to form a rectangular array of hexagonal pots,
- (b) positioning the comb and array of paper pots in a propagation tray with the comb in abutment against the end walls of the tray so that the peripheral side walls of the
15 hexagonal pots are in abutment with the serrations formed on the side walls of the tray,
- (c) filling the hexagonal pots with potting mix,
- (d) removing the comb,
- (e) positioning the tray at a predetermined
20 position beneath a seeding machine, and
- (f) planting one or more seeds at a predetermined position within each hexagonal pot.

The present invention will now be described by way of example only with reference to the accompanying drawings in
25 which:

Figure 1 is a perspective view of a propagation tray from above;

Figure 2 is a plan view of the tray;

Figure 3 is a plan view of the tray when containing
30 a product sold as PAPERPOT; and

Figure 4 is a plan view of a comb for use with the PAPERPOT product.

A tray for propagation of seedlings as illustrated in Figures 1 and 2 is constructed of foamed polystyrene to
35 define an open enclosure 10 defined by side walls 11 and 12, end walls 13 and 14, and a planar base 15. Although not shown in the drawings, it is understood that the base is provided

- 5 -

with a plurality of spaced apertures that act as drain holes. The interior surface of each side wall 11, 12 includes a plurality of equally spaced vertically extending saw tooth projections 20. Each projection 20 presents inclined sides 21 and 22 having an included angle of 120° . The saw tooth projections 20 extend from the base 15 to the top of the enclosure. The end walls 13, 14 are provided with three parallel spaced apart vertical projections 23 of trapezoidal cross-section having inclined side walls 25 and 26 and a planar end wall 27. As shown in Figure 3 the arrangement of the saw tooth projections 20 in the side walls is such that the adjacent inclined sides 21, 22 of the saw tooth projections 20 define two edges of a plurality of interconnected hexagons 30. The projections 23 in the end walls also define spaced hexagons 31. The geometry of two diagonally opposite corners 32, 33 of the tray is such that a hexagon 34 defined by the projections 20 of the side wall 12, 11 shares a common wall 35 with the hexagon 31 defined by the adjacent projection 23 on the end wall 13, 14.

The propagation tray illustrated above is for use with a product known as PAPERPOT. This product is manufactured by Nippon Beet Sugar Manufacturing Co. Ltd., Japan, and distributed by Lannen Tehtaat Oy Finland. The product is sold under the trade mark PAPERPOT. The product comprises a plurality of layers of paper bonded together to form a plurality of interconnected open-ended chambers of hexagonal cross-section. The arrangement of the paper layers is such that the product can fold into a comparatively thin rectangular sheet. Opposite ends of this sheet are provided with planar reinforcing material. By pulling the reinforcing material, the sheets of bonded paper are pulled apart to define the plurality of hexagonal chambers that constitute the pots.

In use, the product is stretched over a comb 50 illustrated in Figure 4. The comb comprises a rectangular sheet 51 of metal mesh material having fairly large rectangular apertures 52. The sheet 51 of wire mesh material

- 6 -

comprises side walls 53, 54 and end walls 55, 56. Four 3 inch long, one quarter of an inch diameter rods 58 of steel are welded equally spaced apart to the end walls 55, 56 so that the rods extend perpendicularly to the sheet. A fifth rod 59 is welded in diametrically opposed corners on the side walls of the sheet. In use, the PAPERPOT product is stretched to the open position with the rods 58 located in adjacent hexagons defined by the ends walls of the product (not shown). The fifth rod 59 is located in the hexagon in the side wall that is adjacent to the end wall on diagonally opposite corners. In this manner, the product can be stretched in an open configuration by the comb. The comb and PAPERPOT product are then placed into the tray with the rods 58, 59 extending into the tray adjacent the end walls 13, 14 of the tray. The mesh 52 of the sheet of material 51 is such that each hexagonal pot defined by the PAPERPOT material can be filled with potting mix by pouring the mix through the apertures 52 of the sheet 51. Once the hexagonal pots have been filled with potting mix the comb can be pulled clear of the tray.

The location of the side walls of the paper product in abutting contact with the saw tooth projections 20 of the side walls 11, 12 of the tray together with the location of the end walls of the paper product with the projections 23 on the end walls 13, 14 of the tray, as well as the substantial mass of potting mix filling the hexagonal pots ensures that the PAPERPOT assumes a fixed orientation within the tray. The saw tooth side walls 13 and 14 of the tray positively define the position of each hexagonal pot so that when the tray is positioned in a predetermined orientation relative to a seeding machine the seeding machine can be operated to ensure that at least one seed is deposited centrally of each pot. In this way alignment of the pots with the feeding device of the machine is a simple matter and wastage of seeds is kept to a minimum. Once the seeds have been positioned automatically by the seeding machine the polystyrene tray may then be displaced to a propagating room where the seeds germinate and grow.

- 7 -

Regular watering can be effected by simply pouring water onto the top of the tray, the water passing through the pots to escape via drainage apertures in the base 15 of the tray.

Use of the tray described above together with the location comb 50 substantially reduces the time to orientate the pots relative to their surroundings and ensures positive positioning of each pot so that a seeding machine can be used in a most effective and efficient manner.

It is understood that, whilst in a preferred embodiment, a comb 50 of the kind described and illustrated with reference to Figure 4 is used to locate and stretch the PAPERPOTS product before insertion into the tray other location means may be used to initially stretch out the product to the expanded configuration.

Although in the preferred embodiment the end walls 13, 14 of the propagation tray are provided with trapezoidal projections 23, it is understood that in another embodiment a planar end wall may be provided to correspond with a similarly planar end wall formed by the PAPERPOT product. It is understood that the number of saw tooth projections 20 and the inclination of each saw tooth projections formed on the side walls would vary depending on the choice of the PAPERPOT product. It is further understood that the overall size of the propagation tray would vary with the length, width and depth of the PAPERPOT product.

- 8 -

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

1. A propagation tray moulded in foamed polystyrene comprising an open enclosure with side walls, end walls and a base, drainage apertures being provided in the base, characterized in that a plurality of equally spaced serrations are provided on the interior of the side walls.
2. The propagation tray of Claim 1, wherein the serrations extend from the top to the bottom of the side walls.
3. The propagation tray according to either Claim 1 or Claim 2, wherein each serration has an included angle of 120° .
4. The propagation tray according to any one of the preceding claims, wherein the end walls are furnished with a plurality of parallel and equally spaced projections extending from the top to the bottom of each wall.
5. The propagation tray according to Claim 4, wherein each projection is of trapezoidal cross-section.
6. The propagation tray according to any one of the preceding claims, wherein the drainage apertures are provided equally spaced in parallel rows extending along the length of the base of the tray.
7. The propagation tray according to Claim 6, wherein each drainage aperture is of circular cross-section with an enlarged countersunk entry.
8. The propagation tray according to any one of the preceding claims, wherein a plurality of ribs are provided on the underside of the tray so that the base of the tray is clear of the surface on which the tray is placed.
9. The propagation tray according to any one of the preceding claims, wherein at one pair of diagonally opposed joins between the end wall and the side wall the co-operation of the serrations and trapezoidal projections defines four sides of a hexagon.
10. The propagation tray according to Claim 9, wherein at the other pair of diagonally opposed joins between the end wall and the side wall the co-operation of the serrations and trapezoidal projections defines three sides of a hexagon.

- 9 -

11. A propagation tray substantially as described herein with reference to and as illustrated in the accompanying drawings.
12. A method of propagating seedlings comprising:
- (a) stretching an array of concertina paper pots onto a comb to form a rectangular array of hexagonal pots,
 - (b) positioning the comb and array of paper pots in a propagation tray according to any one of Claims 1 to 11 with the comb in abutment against the end walls of the tray so that the peripheral side walls of the hexagonal pots are in abutment with the serrations formed on the side walls of the tray,
 - (c) filling the hexagonal pots with potting mix,
 - (d) removing the comb,
 - (e) positioning the tray at a predetermined position beneath a seeding machine, and
 - (f) planting one or more seeds at a predetermined position within each hexagonal pot.
13. A method of propagating seedlings substantially as described herein with reference to and as illustrated in the accompanying drawings.

Dated this 30th Day of December, 1987

AUSTRALIAN FARM FORESTRY NURSERIES PTY. LTD.
By Its Patent Attorneys;

CLEMENT HACK & CO.
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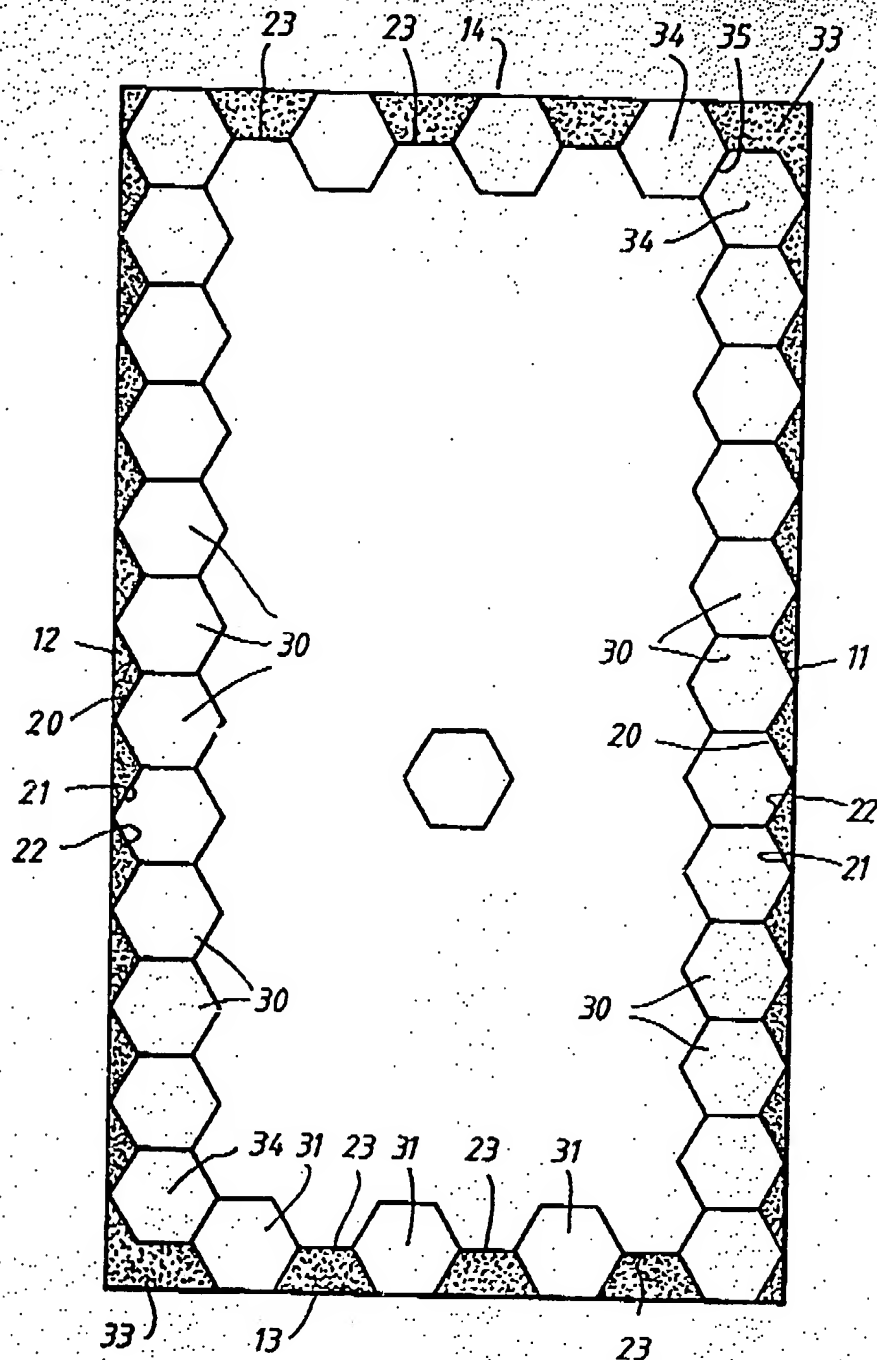
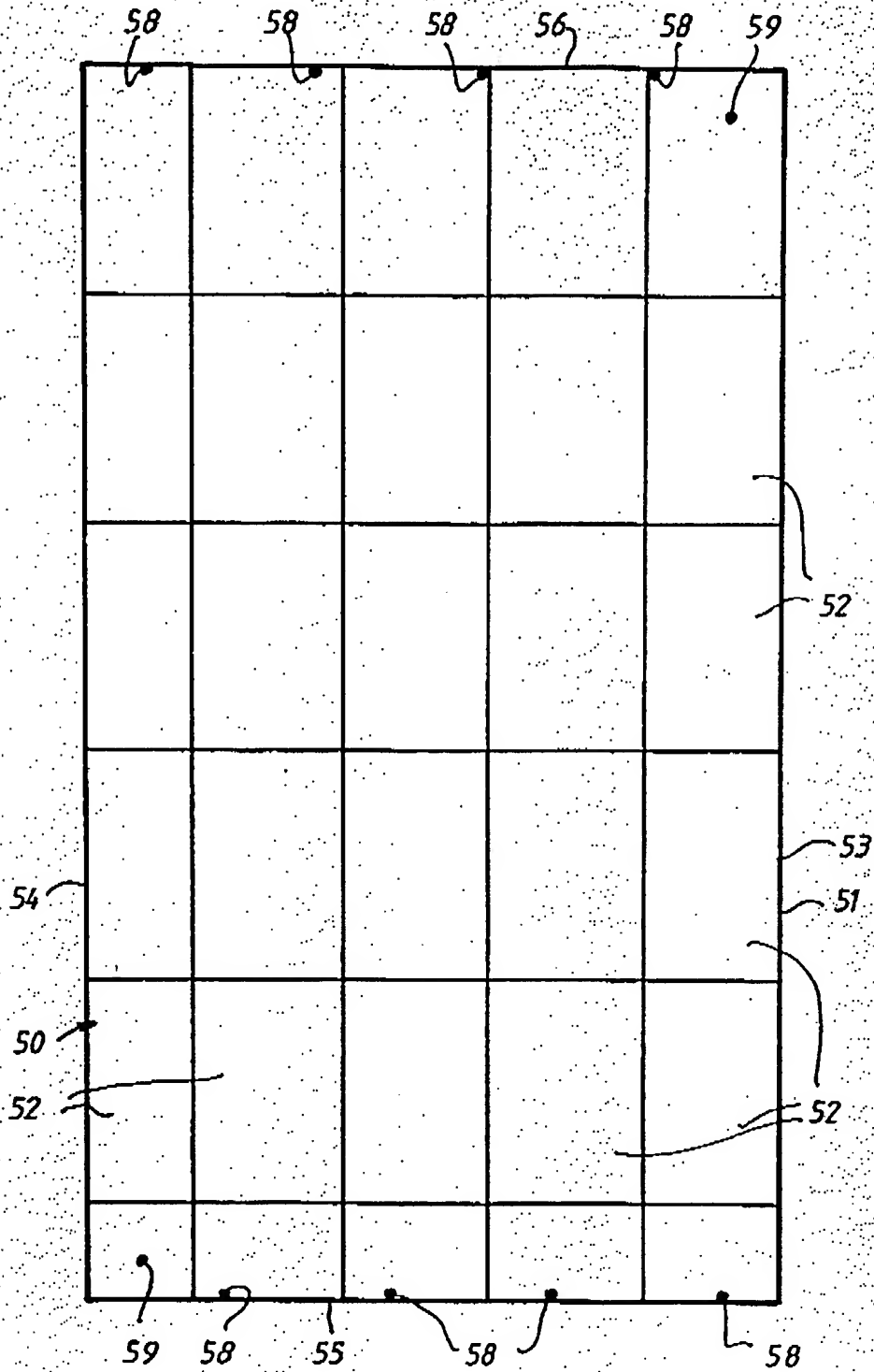


FIG. 3.

FIG. 4

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